ANODYNE ELECTRONICS MANUFACTURING CORP.

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All references to NAT product part numbers (and associated images) are equivalent to AEM product part numbers.

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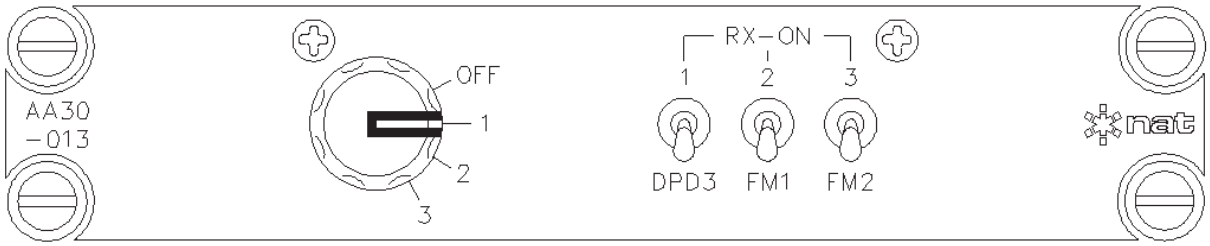
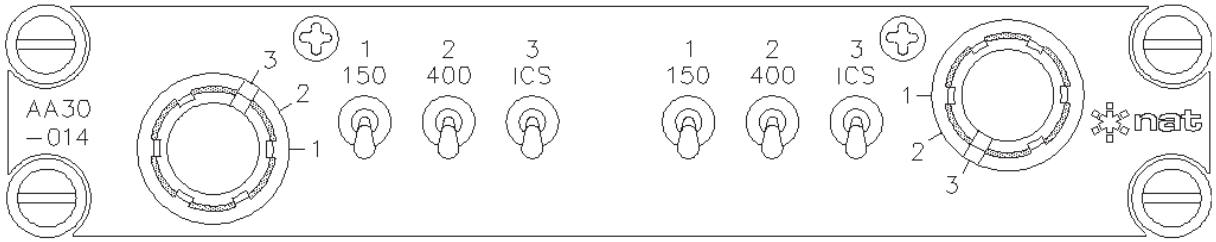
SM73

AA30-0xx
Expansion Switches





INSTALLATION AND OPERATION MANUAL

REV 5.00 June 19, 2012

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The status of this installation and operation manual is controlled by the revision shown on the title page. The status of each section is controlled by revision shown in the footer of each page. All revisions affecting sections of this manual have been incorporated.

ISSUE/REVISION RECORD

Manual Issue Number	Section Revision Number	Revision Description	Issue Date
1.00	Section 1 Rev: 4.00 Section 2 Rev: 4.00 Section 3 Rev: 4.00	Initial release	Sep 18, 2006

AEM MANUAL REVISIONS

Section	Revision Number	Revision Description	Date
All	Rev: 5.00	Updated template	Jun 19, 2012

Table of Contents

Section 1.0 Description

1.1 Introduction

This manual contains general information on the AA30-0xx Expansion Switches. There are many different variants of the AA30-0xx available; in this manual the AA30-013 is described as an example of a single user unit, and the AA30-014 as an example of a dual user unit. Derivative products may be covered by manual supplements, which can be obtained from AEM if available. Information in this section consists of purpose of equipment, features and specifications.

1.2 Purpose of Equipment

The AA30-013 is a single-position expansion switch, and the AA30-014 is a dual-position expansion switch. Both provide transmit capability.

1.3 Features

The AA30-013 is a compact Dzus mounted switch expansion unit that provides expansion for one user and contains only one board. The AA30-014 is a compact Dzus mounted switch expansion unit that provides independent expansion for two users, using two identical circuit boards.

The transmit function allows each user to select one of three transceivers (or two transceivers and intercom). Receive audio can be selected regardless of the transmit selector switch position.

1.4 Specifications

1.4.1 Electrical Specifications

Power Supply — No internal power supply

Input Signals

+28 Vdc Power (AA30-014 only)

Operating Voltage	Nominal	27.5 Vdc
	Minimum	17.0 Vdc
	Maximum	35.5 Vdc
Input Current	50 mA Max @ 27.5 Vdc	

Backlight Power (may be connected to one or both connectors on AA30-014)

Voltage	28 Vdc
Return	Lights Ground

	Mic:	Quantity	1 per user
		Circuitry Type	Single Ended
	Keyline:	Quantity	1 per user
		Active State	Low (A/C ground)
	RX Audio:	Quantity	3 per user
		Circuitry Type	Single Ended

Output Signals

	Mic:	Quantity	3 per user
		Circuitry Type	Single Ended
	Keyline:	Quantity	3 per user
		Active State	Low (A/C ground)
	Phones:	Quantity	1 per user
		Circuitry	Single Ended

1.4.2 Physical Specifications

Height		1.14" (29.0 mm) max.
Depth behind panel		5.82” (147.8 mm) max. (including connectors)
Width behind panel		4.92" (125.0 mm) max wide
Weight	AA30-013	0.70 lbs (0.32 kg) max
	AA30-014	0.95 lbs (0.43 kg) max
Mounting		Dzus rail
Faceplate		Acrylic edge-lit panel
Material/Finish		Chassis and cover are 5052-H32 brushed aluminum with conversation coating finish.
Connectors		One (AA30-013) or two (AA30-014) male 25-pin D-subminature connectors with jackposts.

End of Section 1.0

Section 2.0 Installation

2.1 Introduction

Information in this section consists of: unpacking and inspection procedures, installation procedures, post-installation checks, and installation drawings.

2.2 Unpacking and Inspection

Unpack the equipment carefully. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Note that each unit should have the following:

- AA30-0xx Expansion Switch
- Product Information Card
- Release certification

Verify that all items are present before proceeding and report any shortage immediately to your supplier.

2.2.1 Warranty

All Anodyne Electronics Manufacturing Corp. (AEM) products are warranted for 2 years. See the website www.aem-corp.com/warranty for complete details.

2.3 Installation Procedures

2.3.1 Warnings

Do not bundle any lines from this unit with transmitter coax lines. Do not bundle any audio or DC power lines from this unit with 400 Hz synchro wiring or AC power lines. Do not position this unit or wiring from this unit next to any device with a strong alternating magnetic field such as an inverter, or significant audio interference will result.

2.3.2 Cautions

In all installations, use shielded cable exactly as shown and ground as indicated. Significant ground loop and noise problems may result from not following these guidelines.

The shielding and routing of the MIC LINES used in the AA30-0xx installation **is very critical** and poor performance of the aircraft audio system will result if these issues are not handled properly.

2.3.3 Cabling and Wiring

All unshielded wire shall be selected in accordance with AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Wire types should be to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. For shielded wire applications, use Tefzel MIL-C-27500 shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the wiring diagrams in Section 2.6 as required.

Allow 3 inches from the end of the wire to the shield termination to allow the hood to be easily installed. Note that the hood is a 'clamshell' hood, and is installed after the wiring is complete.

All wiring should be at least 22 AWG, except power and ground lines, which should be at least 20 AWG. Ensure that all ground connections are clean and well secured.

2.3.4 Post-Installation Checks

2.3.4.1 AA30-013 Voltage/Resistance Checks

Check the following:

a) P101 pin **<9>** for +28 Vdc lighting buss voltage.

b) P101 pin **<22>** and **<24>** for continuity to ground.

2.3.4.2 AA30-014 Voltage/Resistance Checks

Check the following:

a) P101 and P102 pins **<7>** for +28 Vdc avionics buss voltage.

b) P101 and P102 pins **<9>** for +28 Vdc lighting buss voltage (only one required).

c) P101 and P102 pins **<22>** and **<24>** for continuity to ground.

d) P101 and P102 pins **<11>** for continuity to ground when keyed.

2.3.4.3 Power On Checks

WARNING:
High volume settings can cause hearing damage.
Set the headset volume control to the minimum volume setting prior to conducting these tests and slowly increase the headset volume level to a comfortable listening level.

a) Install the AA30-0xx and power up the ship's systems. Turn on the radios and accessories required for the system.

b) Check for correct radio audio and adjust for acceptable level.

c) Run through all installed functions, and check the RX and TX functions for all users. Refer to Section 3 for operation details.

2.3.5 Adjustments

The unit is shipped from the factory with all internal adjustments set to the normal test levels. Once installed in the aircraft, it may be desirable to change some of these settings to best suit the local operating environment.

2.3.5.1 Sidetone Level (AA30-014 only)

The sidetone level pots can be accessed through holes in the side of the unit.

When the pot is rotated fully counterclockwise the sidetone level will be at its minimum. Rotating the pot clockwise will increase the level.

Upon satisfactory completion of all performance checks, make the required log entries and complete the necessary Regulatory Agency paperwork before releasing the aircraft for service.

2.4 Continued Airworthiness

Maintenance of the AA30-0xx is 'on condition' only. Periodic maintenance of this product is not required.

2.5 Accessories Required But Not Supplied

Installation kits are required to complete the installation. Different kits are required depending upon the model - for information, please contact the Product Support Department at AEM.

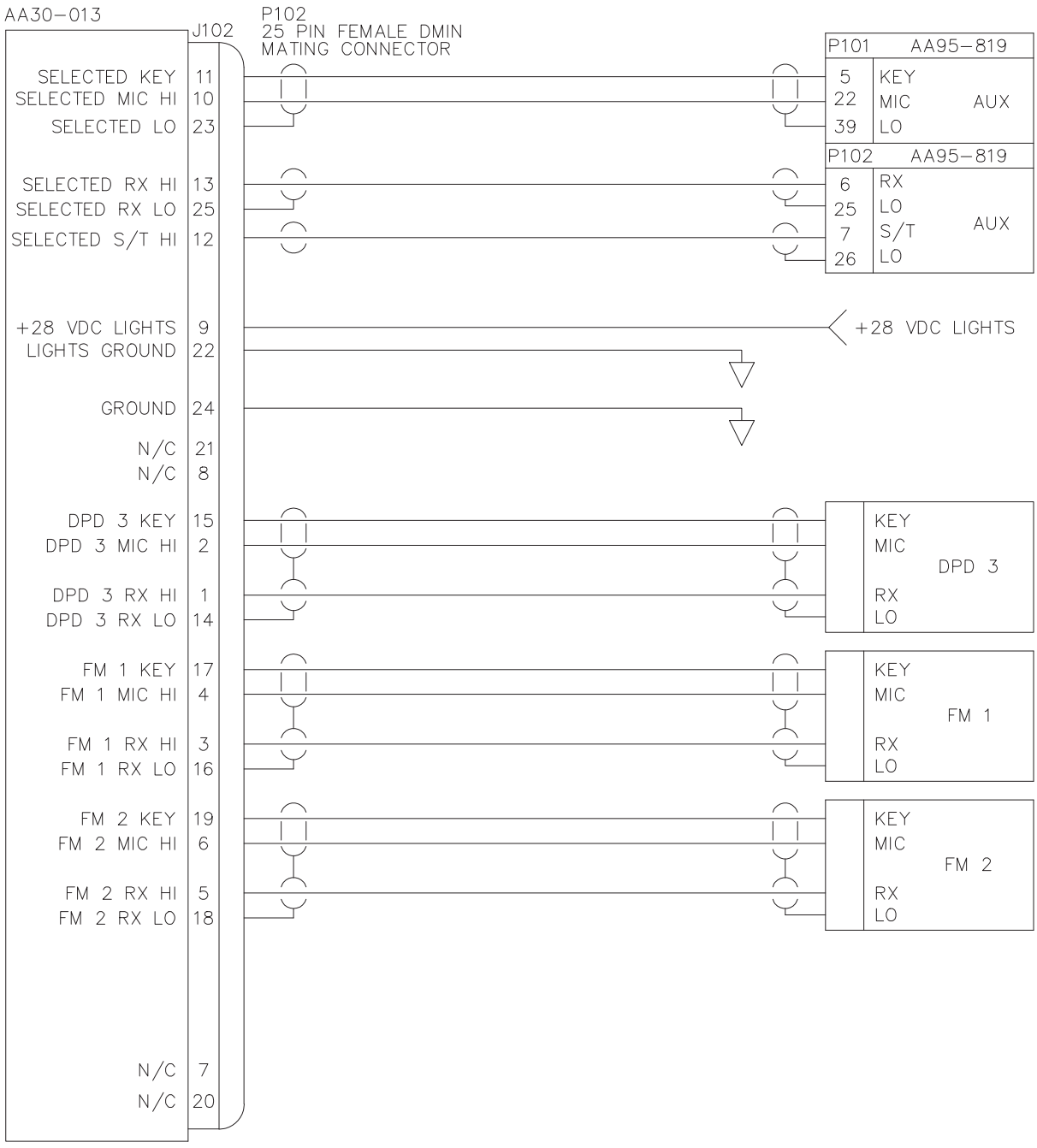
2.6 Installation Drawings

The AA30-013 is described as an example of a single user unit, and the AA30-014 as an example of a dual user unit.

DRAWING	REV.	DESCRIPTION	TYPE
AA30-013			
AA30\013\403-0	1.10	Expansion Switch Unit	Interconnect
AA30\013\405-0	1.10	Expansion Switch Unit	Connector Map
AA30\013\905-0	1.00	Expansion Switch Unit	Faceplate
AA30\013\922-0	1.00	Expansion Switch Unit	Mech. Installation
AA30-014			
AA30\014\403-0	1.00	Expansion Switch Unit with TX	Interconnect
AA30\014\405-0	1.00	Expansion Switch Unit with TX	Connector Map
AA30\014\905-0	1.00	Expansion Switch Unit with TX	Faceplate
AA30\014\922-0	1.10	Expansion Switch Unit with TX	Mech. Installation

Section 2.0 ends following above documents

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	ECR #1224 – ADDED "SELECTED S/T HI" BETWEEN THE AA30–013 AND THE AA95–819, FORMAT CHANGES.	FEB 8/99	TAT



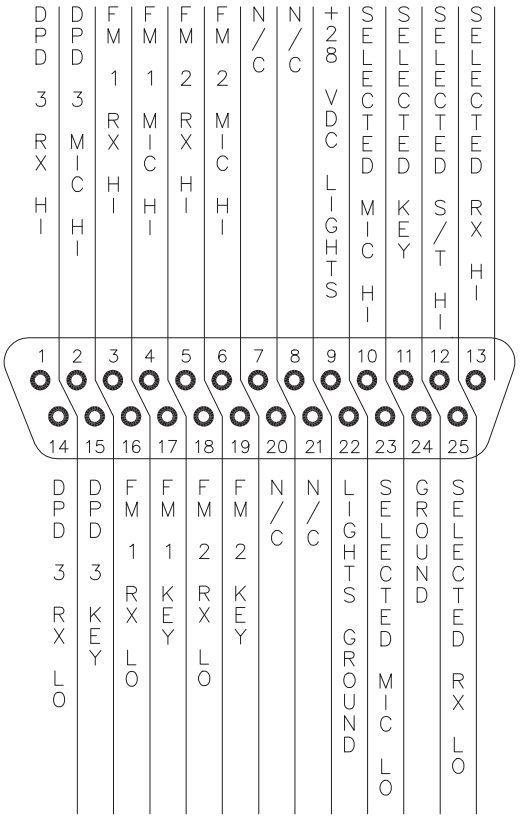
NOTE: USE 22 AWG. WIRE UNLESS OTHERWISE SPECIFIED

DESIGNED	RV	NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	MWS					
DATE	MAY 13/98	TITLE	EXPANSION SWITCH UNIT			
CHECKED	NAT 211 / NAT PROD 105 / NAT 214					
APPROVED	NAT 107	SIZE A	CAGE CODE 3AB01	PART NO. AA30–013	REV. 1.10	SHEET 1/1
FILE 403–0110.DWG		DWG. TYPE INTERCONNECT		DWG. NO. AA30\013\403–0		

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	ECR #1224 – "SELECTED S/T HI" WAS N/C, FORMAT CHANGES.	FEB 8/99	TAT

P102

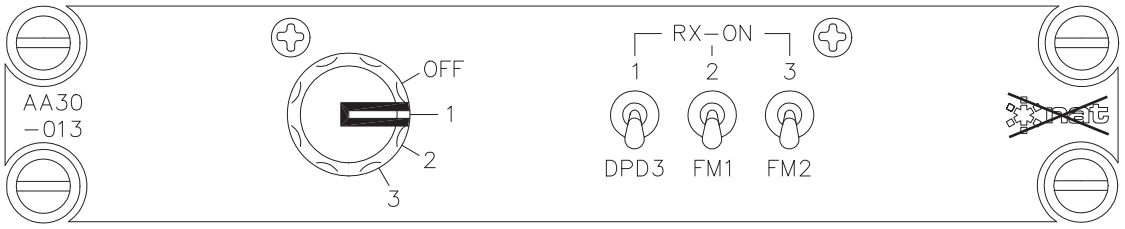
25 PIN FEMALE D–MIN
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR

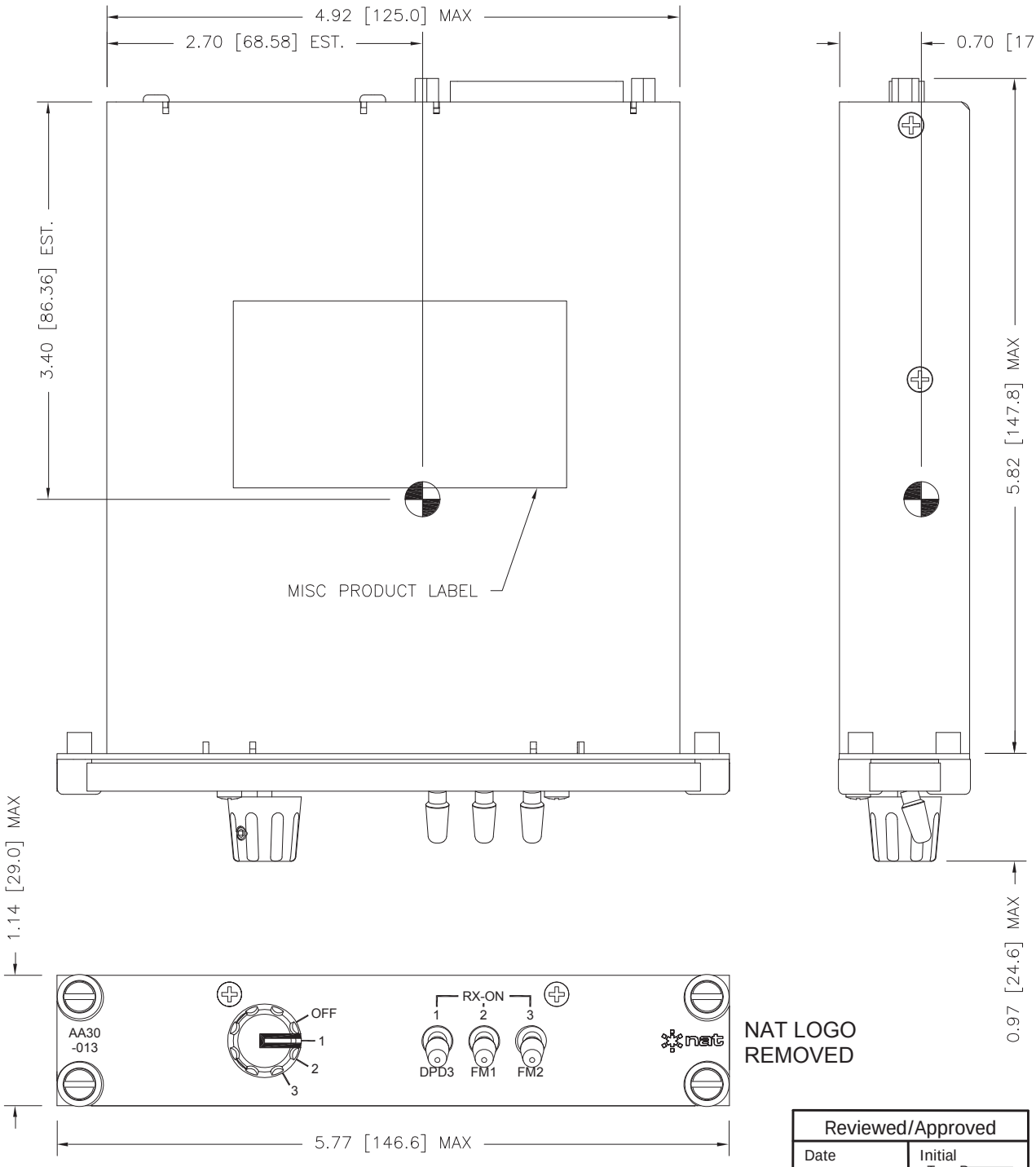
DESIGNED	SRW	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	MWS					
DATE	MAY 13/98	TITLE	EXPANSION SWITCH UNIT			
CHECKED	NAT 211 NAT PROD 105 NAT 214					
APPROVED	NAT 107	SIZE A	CAGE CODE 3AB01	PART NO. AA30–013	REV. 1.10	SHEET 1/1
FILE 405–0110.DWG		DWG. TYPE CONNECTOR MAP		DWG. NO. AA30\013\405–0		

Reviewed/Approved	
Date	Initial
05/02/2011	Tony Pearson Designer May 2, 2011



REMOVE
NAT
LOGO

DESIGNED	SRW	nat NORTHERN AIRBORNE TECHNOLOGY LTD.					
DRAWN	MWS						
DATE	MAY 6/98	TITLE EXPANSION SWITCH UNIT					
CHECKED	NAT PROD. NAT 214 105						
APPROVED	NAT 107	SIZE A	CAGE CODE 3AB01	PART NO. AA30–013		REV. 1.00	SHEET 1/1
FILE 905–0100.DWG		DWG. TYPE FACEPLATE		DWG. NO. AA30\013\905–0			



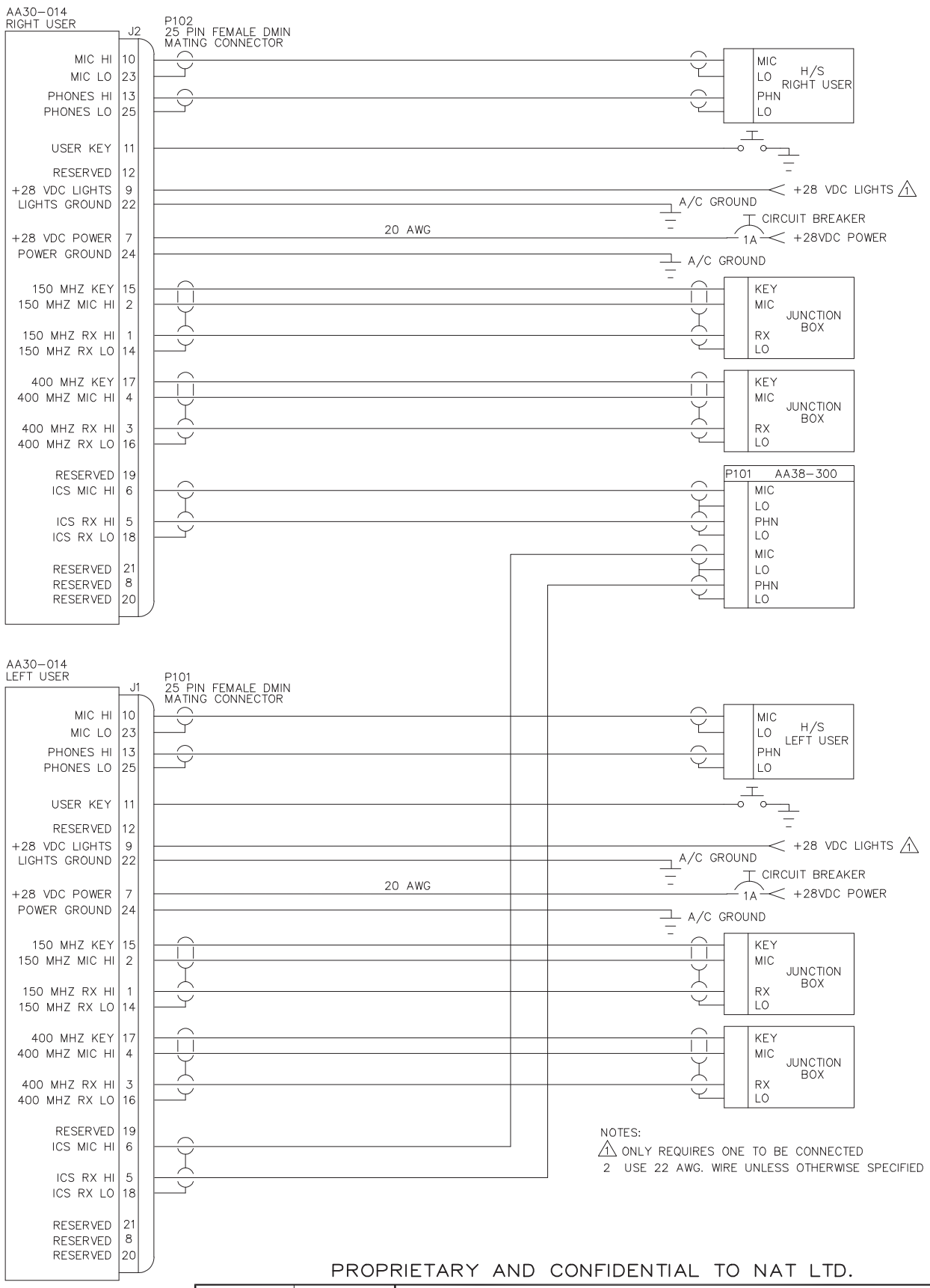
NAT LOGO REMOVED

Reviewed/Approved	
Date 05/02/2011	Initial Tony Pearson Designer May 2, 2011

CENTER OF GRAVITY

NOTES:
1. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M–1994

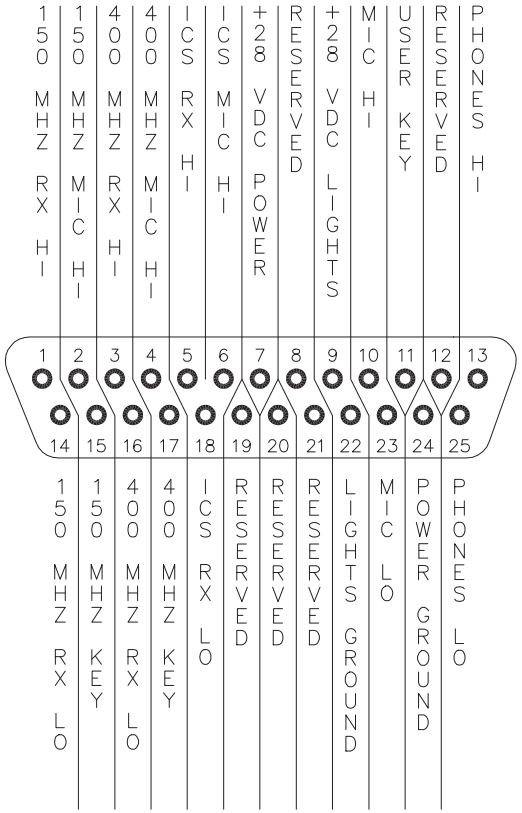
TOLERANCES UNLESS STATED OTHERWISE 0.X=+/–0.030 0.XX=+/–0.010 0.XXX=+/–0.005 0.XXXX=+/–0.002 ANGLE=+/– 0.5 DEG.	DIMENSIONS IN INCHES THIRD ANGLE PROJECTION	DESIGNED	SK	nat NORTHERN AIRBORNE TECHNOLOGY LTD.			
		DRAWN	TAT				
		DATE	NOV 09/05	TITLE	EXPANSION SWITCH UNIT		
		CHECKED	NAT 284 / NAT 255				
MASS: 0.70 lbs. (0.32 Kg) MAX		APPROVED	NAT 114	SIZE A	CAGE CODE 3AB01	PART NO. AA30–013	REV. 1.00 / SHEET 1/1
MATERIAL: –							
FINISH: –		FILE 922–0.DWG		DWG. TYPE MECH. INSTALLATION		DWG. NO. AA30\013\922–0	



DESIGNED	SRK	NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	SRK					
DATE	DEC 16/98	TITLE: EXPANSION SWITCH UNIT WITH TX				
CHECKED	NAT 228 / NAT 214					
APPROVED	NAT 107	SIZE: A	CAGE CODE: 3AB01	PART NO.: AA30-014	REV.: 1.00	SHEET: 1/1
FILE: 403-0100.DWG		DWG. TYPE: INTERCONNECT		DWG. NO.: AA30\014\403-0		

P102

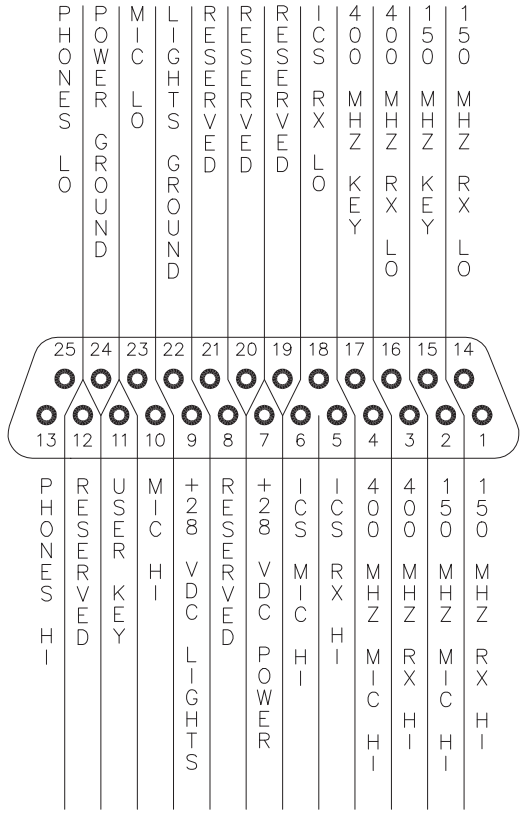
25 PIN FEMALE D-MIN
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR
RIGHT USER

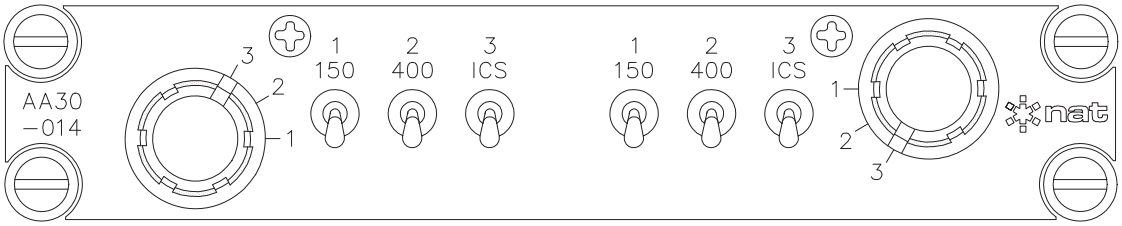
P101

25 PIN FEMALE D-MIN
MATING CONNECTOR



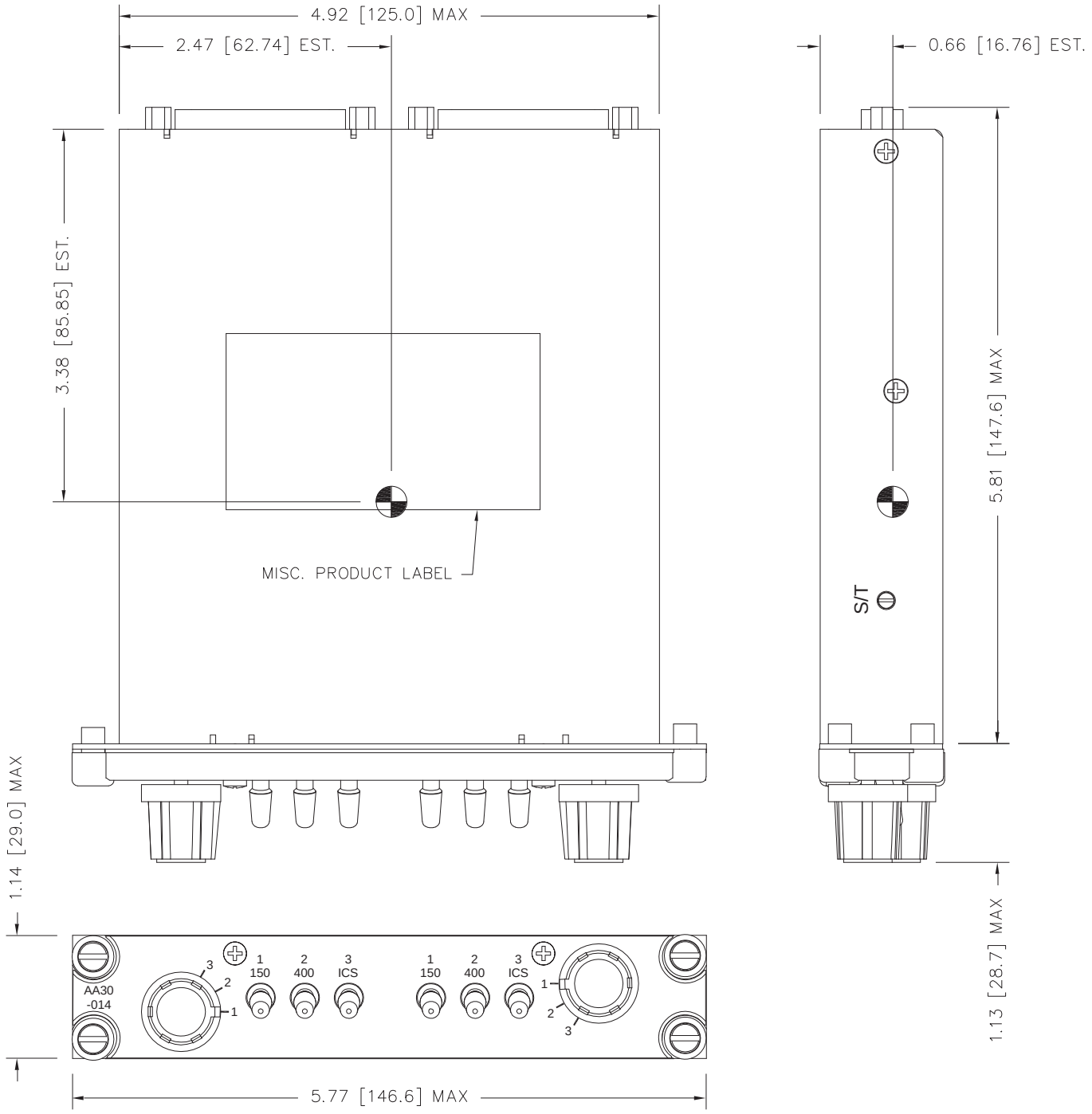
VIEW IS FROM REAR OF AIRFRAME CONNECTOR
LEFT USER

DESIGNED	SRK	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	SRK					
DATE	DEC 8/98	TITLE: EXPANSION SWITCH UNIT WITH TX				
CHECKED	NAT 228 / NAT 214					
APPROVED	NAT 107	SIZE: A	CAGE CODE: 3AB01	PART NO.: AA30-014	REV.: 1.00	SHEET: 1/1
FILE: 405-0100.DWG		DWG. TYPE: CONNECTOR MAP		DWG. NO.: AA30\014\405-0		



DESIGNED	SRW	NORTHERN AIRBORNE TECHNOLOGY LTD.					
DRAWN	TAT						
DATE	DEC 11/98	TITLE	EXPANSION SWITCH UNIT WITH TX				
CHECKED	NAT 211 / NAT 228 / NAT 214						
APPROVED	NAT 107	SIZE A	CAGE CODE 3AB01	PART NO. AA30−014		REV. 1.00	SHEET 1/1
FILE 905−0100.DWG		DWG. TYPE FACEPLATE		DWG. NO. AA30\014\905−0			

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR01081 – ADDED SIDETONE ADJ. HOLE.	APR 15/05	TAT



CENTER OF GRAVITY

NOTES:
1. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M–1994

DIMENSIONS ARE INCHES [mm]	DESIGNED	SRK	NORTHERN AIRBORNE TECHNOLOGY LTD.				
THIRD ANGLE PROJECTION	DRAWN	TAT/SRK					
	DATE	DEC 16/98	TITLE	EXPANSION SWITCH UNIT WITH TX			
MASS: 0.95 lbs. (0.43 Kg) MAX	CHECKED	NAT 255					
MATERIAL: –	APPROVED	NAT 131	SIZE A	CAGE CODE 3AB01	PART NO. AA30–014	REV. 1.10	SHEET 1/1
FINISH: –	FILE	922–0.DWG	DWG. TYPE	MECH. INSTALLATION	DWG. NO.	AA30\014\922–0	

Section 3.0 Operation

3.1 Introduction

Information in this section consists of the functional and operational procedures for the AA30-0xx Expansion Panels.

The AA30-013 is described as an example of a single user unit, and the AA30-014 as an example of a dual user unit.

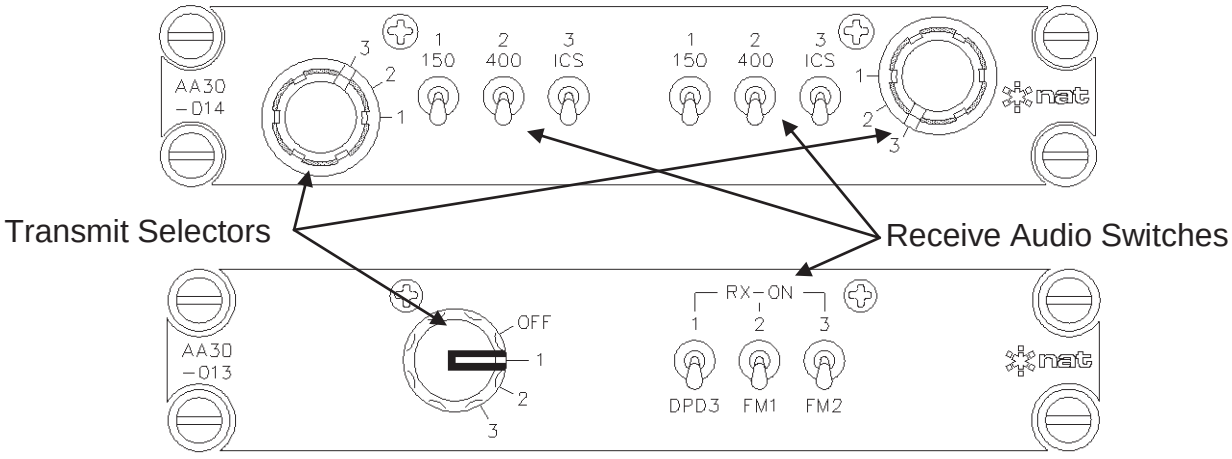
3.2 General

The AA30-0xx Series are Dzus-mounted expansion panels designed to expand a single transceiver selection from an audio control panel to allow three transceiver selections.

These units are generally part of a larger system with other audio controllers or equipment; the whole system must be considered, not just the AA30-0xx accessory unit.

3.3 Controls and Indicators

The controls on both the dual and single user versions of the AA30 work in a similar manner; for simplicity, only one set of controls will be described.



3.3.1 Transmit Selector

The transmit selector is a rotary plastic switch used to select the transceiver output for transmission.

3.3.2 Receive Audio Switches

The three receive audio selection switches are two-position on-off switches. They select the required receive audio when in the 'up' (on) position.

End of Section 3.0